

Appln. No. 09/870,496  
Reply to the Office Action of August 26, 2003

**REMARKS**

Claims 2, 4, 7, 10, 12 and 24 have been canceled. Claims 1, 3, 5, 6, 8, 9, 11 and 13-23 and new Claims 25-27 are active in the case. Claims 17-23 stand withdrawn from consideration. Reconsideration is respectfully requested.

**Claim Amendments**

New Claims 25-27 have been added. Support for these claims may be found on page 11 of the text. Entry of the new claims is respectfully requested.

**Claim Objection**

The objection to Claim 14 is believed obviated by the amendment made thereto. Withdrawal of the rejection is respectfully requested.

**Invention**

The present invention is directed to a silica-alumina based glass composition which is useful as a glass in the manufacture of a data storage medium such as a magnetic disc. As such, the composition of the invention as now claimed consists essentially of 40 to 59 % SiO<sub>2</sub>, 5 to 20 % Al<sub>2</sub>O<sub>3</sub>, 0 to 8 % B<sub>2</sub>O<sub>3</sub>, 0 to 10 % MgO, 0 to 12 % CaO, 10.6 to 20 % SrO, 0 to 2 % BaO, 0 to 4 % ZnO, 0 to 2 % Li<sub>2</sub>O, 0 to 10 % Na<sub>2</sub>O, 0 to 8 % K<sub>2</sub>O, 1 to 10 % TiO<sub>2</sub> and 0 to 5 % ZrO<sub>2</sub>, wherein MgO + CaO + SrO + BaO is at least 15 %; Al<sub>2</sub>O<sub>3</sub> + TiO<sub>2</sub> is at least 11 % and TiO<sub>2</sub> + ZrO<sub>2</sub> is at least 2.3 %, all amounts given in terms of percent by weight.

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Prior Art Rejection, 35 USC 103

Claims 1, 3, 5, 6, 8, 9, 11 and 13-15 stand rejected based on 35 USC 103 as obvious over Kohli et al, U. S. Patent 5,854,152. This ground of rejection is respectfully traversed.

The Kohli et al '152 patent, as previously explained is of relevance to the present invention because it describes a silica-alumina glass composition that is used for much the same purposes as the present glass. However, as applicants have stated previously, an important aspect of the glass of the present invention is that the sum of the  $\text{Al}_2\text{O}_3$  and  $\text{TiO}_2$  components of the present glass is important from the viewpoint of the weather resistance characteristics of the product glass of the invention as demonstrated in the  $N_L$  and  $N_S$  data obtained for examples of glass formulations of Examples 1-9 and 11-15 of the text. It is clear that all of these examples exhibit favorable values of  $N_L$  and  $N_S$  which is consistent with the comments in the paragraph bridging pages 6 and 7 of the specification and on pages 10 and 11 of the text of the application concerning  $\text{Al}_2\text{O}_3$  and  $\text{TiO}_2$  and the sum of  $\text{Al}_2\text{O}_3$  and  $\text{TiO}_2$  in that the presence of these two oxides has a significant impact on the corrosion resistance of product glasses. While it is true that the specification states that the presence of  $\text{TiO}_2$  is not essential, nevertheless, this does not belie the fact that the presence of  $\text{TiO}_2$  has an impact on the expansion coefficient, corrosion resistance and glass transition temperature of the product glass as stated. Although the Examiner refers to the data of Example 10 of Table 1 of the text as not supportive of or as being inconsistent with applicants' statements concerning the property inducing effects or significance of  $\text{Al}_2\text{O}_3$  and  $\text{TiO}_2$ , applicants point out that of all 21 examples of glass compositions described in the Table, the composition of Example 10 contains the greatest quantity of alumina. In view of the fact that the text specifically

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indicates on page 6 that increasing amounts of  $\text{Al}_2\text{O}_3$  in the composition improve the corrosion resistance of the glass, as well as increase the glass transition temperature of the glass, it is therefore clear that the data of Example 10 of the specification are not inconsistent with applicants' comments concerning the significance of the  $N_L$  and  $N_S$  data of Examples 1-9 and 11-15 of the text because of the relatively high content of alumina in this glass.

As to the Kohli et al patent, it is clear from the comments in column 2 of the patent that  $\text{TiO}_2$  is clearly an optional component of the glass, and whether used alone or in combination with other optional oxides, must not be present in an amount greater than 5 %. Nothing is mentioned about the reason for use of  $\text{TiO}_2$  in the glass of the reference, and indeed, not one of the examples of Table I contains  $\text{TiO}_2$  as a component. Still further, there is absolutely no teaching or suggestion in the patent that  $\text{Al}_2\text{O}_3$  and  $\text{TiO}_2$  in some way cooperate to improve upon one or more properties of the glass. Further, the patent does not show or suggest the subject matter of newly added Claims 25-27 which set forth specific combined quantities of  $\text{Al}_2\text{O}_3$  and  $\text{TiO}_2$  for the improvement of one or more properties of the glass. Accordingly, it is clear that the patent does not suggest the glass composition as claimed and withdrawal of the ground of rejection raised under 35 USC 103 is respectfully requested.

Claims 1, 3, 5, 6, 8, 9, 11, 13-15 and 16 stand rejected based on 35 USC 103 as obvious over Miwa et al, U. S. Patent 6,162,750. This ground of rejection is respectfully traversed.

The Miwa et al disclosure is also of relevance to the present invention because it discloses a soda-lime glass that is used in several applications including use as a plasma

display panel or unit. As such silica-alumina formulations are disclosed that may contain Li<sub>2</sub>O, Na<sub>2</sub>O, K<sub>2</sub>O, MgO, CaO and SrO. Further, although TiO<sub>2</sub> is briefly mentioned at column 2, lines 5-15 and column 4, lines 8-17 as an optional component of the glass composition, the stated reason for the presence of TiO<sub>2</sub> is to protect the glass from UV rays. There is no teaching or suggestion of the weather resistance characteristic of TiO<sub>2</sub> as a component of the present composition, and there is certainly no teaching or suggestion that the combination of Al<sub>2</sub>O<sub>3</sub> and TiO<sub>2</sub> at a specific minimum value cooperates in achieving a glass composition that exhibits improved corrosion resistance. Accordingly, the Miwa et al patent does not suggest the present invention and withdrawal of the outstanding ground of rejection is respectfully requested.

Claims 1, 3, 5, 6, 8, 9, 11 and 13-15 stand rejected based on 35 USC 103(a) as obvious over Yoshii et al, U. S. Patent 5,925,583. This ground of rejection is respectfully traversed.

The Yoshii et al patent discloses a soda-lime glass composition that functions as a heat-resistant glass for the fabrication of the likes of liquid crystal displays and electroluminescence display panels. The soda-lime glass is based on the combination of silica and alumina and also contains K<sub>2</sub>O and MgO as an essential components. Other alkali metal and alkaline earth metal oxides may also be present in the composition, as well as TiO<sub>2</sub>. However, as to TiO<sub>2</sub>, the patent at column 6 only discloses the oxide as a possible component of the glass formulation in an amount of less than 3 % for the purpose of improving chemical stability of the glass. Moreover, as to the Al<sub>2</sub>O<sub>3</sub> component, the same is used to increase the strain point of the product glass. There is no teaching or suggestion

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anywhere in the reference of the cooperative use of both Al<sub>2</sub>O<sub>3</sub> and TiO<sub>2</sub> to improve the weatherability characteristics or corrosion resistance of the glass. Thus, there is no teaching or suggestion that the two combined oxides must be used in a minimum amount of 11 % in a glass formulation, and certainly no teaching or suggestion of the minimum combined amounts of the two oxides of new Claims 25-27. Accordingly, the patent is not believed to suggest the invention as claimed and withdrawal of the outstanding ground of rejection is respectfully requested.

Applicants continue to believe that the application is in proper condition for allowance. Early notice to this effect is earnestly solicited.

Respectfully submitted,

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